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Appl. No. 09/910,141 Arndt, Dated November 12, 2003 Reply to Final Office Action of June 16, 2003

This listing of claims will replace all prior versions, and listings, of claims in the application:

ID:GOODWIN PROCTER LLP

## **LISTING OF CLAIMS:**

Claim 1 (currently amended):

Ouinoline derivatives according to the formula 1

$$Z$$
 $P$ 
 $CH_2)n$ 
 $R_3$ 
 $R_3$ 
 $R_3$ 

(1)

in which

R,  $R_1$ ,  $R_2$ ,  $R_3$  can be attached to any of the quinoline carbon atoms  $C_2$  to  $C_8$ , are identical or different and independently of one another denote hydrogen, straight-chain or branched C<sub>1-8</sub> alkylC<sub>1-8</sub> alkyl, C<sub>3-7</sub> cycloalkyl, straight-chain or branched C<sub>1-8</sub> alkylcarbonyl, straight-chain or branched C1-8 alkoxy, halogen, aryl-C1-8 alkoxy, nitro, amino, mono-C<sub>1-4</sub> alkylamino, di-C<sub>1-4</sub> alkylamino, C<sub>1-8</sub> alkoxycarbonylamino, C<sub>1-6</sub> alkoxycarbonylamino-C<sub>1-8</sub> alkyl, cyano, straight-chain or branched cyano-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, carboxyl, C<sub>1-8</sub> alkoxycarbonyl, C<sub>1-4</sub> alkyl which is substituted by one or more fluorine atoms, carboxy-C<sub>1-8</sub> alkyl or C<sub>1-8</sub> alkoxycarbonyl-C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, straight-chain or branched cyano-C<sub>1-6</sub> alkyl, aryl, where the aryl radical can be unsubstituted or mono- or polysubstituted by identical or different substituents from the group consisting of halogen, straight-chain or branched  $C_{1-8}$  alkyl,  $C_{3-7}$  cycloalkyl,

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carboxyl, straight-chain or branched C1-8 alkoxycarbonyl, by trifluoromethyl, hydroxyl, straight-chain or branched C1-8 alkoxy, benzyloxy, nitro, amino, mono-C1-4 alkylamino, di-C14 alkylamino, cyano, straight-chain or branched cyano-C1-6 alkyl, where R and R1 or R<sub>2</sub> and R<sub>3</sub> can form a fused aromatic 6-membered ring with the quinoline ring forming an acridine ring which for its part can be substituted at any C atom ring position by the radicals R, R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> having the meanings mentioned above;

P and Q are each 2 hydrogen atoms;

Z is oxygen or sulfur, where the radical

$$Z$$
 $P$ 
 $(CH_2)m$ 
 $Q$ 

substituted on the quinoline heterocycle can be attached to C atoms C2-8 of the quinoline ring skeleton;

is nitrogen or C R5, where R5 is hydrogen or C16 alkyl; X independently of one another is an integer between 0 and 3, with the provise that when n = 0, X is a CR<sub>5</sub>R<sub>6</sub> group wherein R<sub>5</sub> and R<sub>6</sub> independently of one another represent hydrogen or C<sub>1-6</sub> alkyl, and that the nitrogen atom adjacent to the C=Z group is substituted by a hydrogen atom or a C<sub>1-6</sub> alleyl;

n is 1 or 2 and m is 0 or 1, with the proviso that the sum of n and m is 2;

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is a straight-chain or branched C<sub>1-20</sub> alkyl radical which can be saturated or  $R_{4}$ unsaturated, with one to three double and/or triple bonds, and which can be unsubstituted or can optionally be substituted at the same or different C atoms by one, two or more aryl, heteroaryl, halogen, cyano, C1-6 alkoxycarbonylamino, C1-6 alkoxy, amino, mono-C<sub>1-4</sub> alkylamino or di-C<sub>1-4</sub> alkylamino; a C<sub>6-14</sub> aryl radical, G<sub>6-14</sub> aryl-G<sub>1-4</sub> alkyl radical, or a C<sub>2-10</sub> heteroaryl or C<sub>2-10</sub> heteroaryl-C<sub>1-4</sub> alkyl radical which contains one or more heteroatoms selected from the group consisting of N, O and S, where the C<sub>1-4</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by identical or different substituents from the group consisting of C1-6 alkyl, halogen or oxo (=O) and where the  $C_{6-14}$  aryl or  $C_{2-10}$  heteroaryl radical can be unsubstituted or mono- or polysubstituted by identical or different substituents from the group consisting of straight-chain or branched  $C_{1-8}$  alkyl,  $C_{3-7}$  cycloalkyl, halogen, cyano,  $C_{1-6}$  alkoxycarbonylamino,  $C_{1-6}$  alkoxy, carboxyl, C<sub>1-8</sub> alkoxycarbonyl, straight-chain or branched C<sub>1-6</sub> alkyl which is substituted by one or more fluorine atoms, hydroxyl, straight-chain or branched C1-8 alkoxy, where adjacent oxygen atoms can also be linked by C1.2 alkylene groups, benzyloxy, nitro, amino, mono-C<sub>1-4</sub> alkylamino, di-C<sub>1-4</sub> alkylamino, aryl, which can be unsubstituted or mono- or polysubstituted by identical or different substituents from the group consisting of straight-chain or branched C1-8 alkyl, C3-7 cycloalkyl, carboxyl, straight-chain or branched C<sub>1-8</sub> alkoxycarbonyl, trifluoromethyl, hydroxyl, straight-chain or branched C<sub>1-8</sub> alkoxy, benzyloxy, nitro, amino, mono-C<sub>1-4</sub> alkylamino, di-C<sub>1-4</sub> alkylamino, cyano, straight-chain or branched cyano-C1-6 alkyl;

and their structural isomers and stereoisomers and their pharmaceutically acceptable salts.

Claim 2 (currently amended): The quinoline derivative of claims 1 or 15, wherein in R, R1, R2, and R3 R, R1, R2 and R3, said  $C_{1-8}$  alkylcarbonyl is acetyl, said  $C_{1-8}$  alkoxy is benzyloxy or phenylethoxy, said fluorine atoms are trifluoromethyl, said C2-6 alkenyl is allyl, said C2-6 alkynyl is ethynyl or propargyl, said cyano-C1-6 alkyl is cyanomethyl, said  $C_{1.8}$  alkoxy- carbonyl is tert-butoxycarbonyl, and said  $C_{1.8}$  alkoxy is methoxy or ethoxy,

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and in  $R_4$  said fluorine atoms are trifluoromethyl, said  $C_{1-8}$  alkoxy is methoxy or ethoxy, and said  $C_{1-2}$  alkylene group is a methylene group.

Claim 3 (currently amended): The quinoline derivative of formula 1 of claim 1, wherein R,  $R_1$ ,  $R_2$ ,  $R_3$ , X, Z, P, Q, n and m have the meanings given in claim 1;

R<sub>4</sub> is a straight-chain or branched C<sub>1-20</sub> alkyl radical which can be saturated or unsaturated, with one to three double and/or triple bonds, and which can be unsubstituted or optionally substituted on the same or different C atoms by one, two or more aryl, heteroaryl, halogen, C<sub>1-6</sub> alkoxy, amino, mono- C<sub>1-4</sub> alkylamino or di-C<sub>1-4</sub> alkylamino;

a phenyl ring or a naphthyl ring, each of which can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of straight-chain or branched  $C_{1.8}$  alkyl,  $C_{3.7}$  cycloalkyl, halogen, cyano, $C_{1.6}$  alkoxycarbonylamino,  $C_{1.6}$  alkoxy, carboxyl,  $C_{1.6}$  alkoxycarbonyl, straight-chain or branched  $C_{1.6}$  alkyl which is substituted by one or more fluorine atoms, hydroxyl, straightchain or branched  $C_{1.6}$  alkoxy, benzyloxy, nitro, amino, mono-  $C_{1.4}$  alkylamino, di- $C_{1.4}$  alkylamino, aryl, which can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of straight-chain or branched  $C_{1.8}$  alkyl,  $C_{3.7}$  cycloalkyl, carboxyl, straight-chain or branched  $C_{1.8}$  alkoxycarbonyl, by trifluoromethyl, hydroxyl, straight-chain or branched  $C_{1.8}$  alkoxy, benzyloxy, nitro, amino, mono- $C_{1.4}$  alkylamino, di- $C_{C1.4}$  alkylamino, cyano, straight-chain or branched cyano-  $C_{1.6}$  alkyl;

a 2, 4, 5 or 6 pyrimidinyl radical, or a 2, 4, 5- or 6-pyrimidinyl  $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or exe (=0) and the 2, 4, 5 or 6 pyrimidinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y

wherein Y is a G<sub>1-6</sub>-alkyl, halogen, nitro, amino, mono-G<sub>1-6</sub>-alkylamino, di G<sub>1-6</sub>-alkylamino, di G<sub>1-6</sub>-alkylamino, di G<sub>1-6</sub>-alkoxyearbonyl, G<sub>1-6</sub>-alkylamino, di G<sub>1-6</sub>-alkylamino, di

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alkoxycarbonylamino or C<sub>1-6</sub> alkyl which is mono or polysubstituted by fluorine, C<sub>6-10</sub> aryl and C<sub>6-10</sub> aryl-C<sub>1-6</sub> alkyl;

a 3 , 4 , 5 or 6 pyridazinyl radical, or a 3 , 4 , 5 or 6 pyridazinyl  $C_{1,4}$  alkyl radical, wherein the  $C_{1,4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1,6}$  alkyl, halogen or exe (-O), and the 3 , 4 , 5 or 6 pyridazinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen; or Y;

a 2, 3, 5 or 6 pyrazinyl radical, or a 2-, 3-, 5- or 6 pyrazinyl  $C_{1,4}$  alkyl radical, wherein the  $C_{1,4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1,6}$  alkyl, halogen or exe (=0), and the 2-, 3-, 5- or 6-pyrazinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y; a 3-, 4-, 5-, 6-, 7-, or 8-cinnolinyl radical, or a 3-, 4-, 5-, 6-, 7-, or 8-cinnolinyl  $C_{1,4}$ -alkyl radical, wherein the  $C_{1,4}$ -alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1,4}$ -alkyl, halogen or exe (=0), and the 3-, 4-, 5-, 6-, 7-, or 8-cinnolinyl radical can be unsubstituted or mono- or up to pentasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2, 4, 5, 6, 7, or 8-quinazolinyl radical, or a 2-, 4, 5, 6, 7 or 8-quinazolinyl  $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of hydrogen,  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2, 4, 5, 6, 7, or 8-quinazolinyl radical can be unsubstituted or mono- or up to pentasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2, 3, 5, 6, 7, or 8 quinoxalinyl radical, or a 2-, 3-, 5-, 6, 7, or 8 quinoxalinyl C<sub>1-4</sub> alkyl radical, wherein the C<sub>1-4</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or oxo (-0), and the 2-, 3-, 5-, 6-, 7-, or 8-quinoxalinyl radical can be unsubstituted or

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mene—or up to pentacubatituted by the same or different substituents from the group of hydrogen, or Y;

a 1-, 4-, 5-, 6-, 7-, or 8-phthalazinyl radical, or a 1-, 4-, 5-, 6-, 7-, or 8-phthalazinyl C<sub>1-4</sub> alkyl radical can be unsubstituted or mone-or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or oxo (-O), and the 1-, 4-, 5-, 6-, 7-, or 8-phthalazinyl radical can be unsubstituted or mone-or up to pentasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2, 3, 4, 5, 6, 7 or 8 quinolyl radical, or a 2, 3, 4, 5, 6, 7 or 8 quinolyl  $C_{1,4}$  alkyl radical, wherein the  $C_{1,4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1,6}$  alkyl, halogen or oxo (=0), and the 2-, 3, 4, 5, 6, 7 or 8 quinolyl radical can be unsubstituted or mono- or up to hexasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1, 3, 4, 5, 6, 7-or 8-isoquinolyl radical, or a 1, 3, 4, 5, 6, 7-or 8-isoquinolyl C<sub>1,4</sub>-alkyl radical, wherein the C<sub>1,4</sub>-alkyl radical can be unsubstituted or mono-or polysubstituted by the same or different substituents from the group of C<sub>1,6</sub>-alkyl, halogen or oxo (=O), and the 1, 4, 5, 6, 7-or 8-isoquinolyl radical can be unsubstituted or mono-or up to hexasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 6-, 8- or 9 [9H] purinyl radical, or a 2-, 6-, 8- or 9 [9H] purinyl C<sub>1-4</sub> alkyl radical, wherein the C<sub>1-4</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or oxo (=0), and the 2-, 6-, 8- or 9-[9H] purinyl radical can be unsubstituted or mono- to trisubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2, 6, 7- or 8-[7H]-purinyl radical, or a 2, 6, 7- or 8-[7H]-purinyl C<sub>1-4</sub> alkyl radical, wherein the C<sub>1-4</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or exe (-O), and the

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2.6.7 or 8 [7H] purinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1, 2, 3, 4, 5, 6, 7, 8 or 9 aeridinyl radical, or a 1, 2, 3, 4, 5, 6, 7, 8 or 9 acridinyl C1-4 alkyl radical, where the C1-6 alkyl radical can be unsubstituted or mono-or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogon or oxo (=0), and the 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9 aeridinyl radical can be unsubstituted or mono to octasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-phonanthridinyl radical, or a 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9 phenanthridinyl C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono-or-polysubstituted by the same or different substituents from the group of hydrogen,  $C_{1,6}$  alkyl, halogen or  $\infty$  (-0), and the 1,2,3,4,5,6,7,8 or 9phonanthridinyl radical can be unsubstituted or mone or up to estasubstituted by the <del>same or different substituents of Y;</del>

a 2-, 3-, 4-, 5- or 6-pyridyl radical where the 2-, 3-, 4-, 5- or 6pyridyl radical can be unsubstituted or mono- or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 3-, 4-, 5- or 6-pyridinyl C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1.6}$  alleyl, halogen or  $\infty$  (=0), and the 2-, 3-, 4-, 5- or 6-pyridinyl radical can be unsubstituted or mone or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2, 3, 4- or 5-thionyl radical, or a 2, 3, 4- or 5 thionyl C<sub>1.6</sub> alkyl radical, wherein the Ci-6 alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2-, 3-, 4or 5-thionyl radical can be unsubstituted or mono-or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y;

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a 2 , 4 , or 5 thiazolyl radical, or a 2 , 4 , or 5 thiazolyl G: 6 alkyl C: 6 alkyl radical, wherein the C1-6-alkyl radical can be unsubstituted or mone-or polysubstituted by the same or different substituents from the group of C1.6 alkyl, halogen or oxe (=0), and the 2-, 4-, or 5-thiazelyl radical can be unsubstituted or mone- or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 3-, 4-, or 5-isothiazolyl radical, or a 3-, 4-, or 5-isothiazolyl-C<sub>1-6</sub>-alkyl radical, wherein the C46 alkyl radical can be unsubstituted or mono or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or exe ( $-\Theta$ ), and the 3-, 4-, or 5-isothiazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 4-, 5-, 6-, or 7-benzothiazolyl radical, or a 2-, 4-, 5-, 6-, or 7-benzothiazolyl-C<sub>1-6</sub> alkyl-radical, wherein the  $G_{1.6}$ -alkyl radical can be unsubstituted or mono-or polysubstituted by the same or different substituents from the group of G16 alkyl, halogen or oxo (=O), and the 2, 4, 5, 6, or 7-benzothiazolyl radical can be unsubstituted or mone- or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1 , 2 , 4 , or 5 imidazolyl radical, or a 1 , 2 , 4 , or 5 imidazolyl  $G_{16}$  alkyl radical, wherein-the C1-6 alkyl radical can be unsubstituted or mone or polysubstituted by the same or different substituents from the group of C1 4 alkyl, halogen or exe (=0), and the 1-. 2-. 4-, or 5-imidazolyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1, 3, 4, or 5 pyrazolyl radical, or a 1-, 3-, 4- or 5 pyrazolyl C<sub>1-6</sub> alkyl radical, wherein the  $C_{1,6}$  alkyl radical can be unsubstituted or mone- or polysubstituted by the same or different substituents from the group of C16 alkyl, halogen er exe (=0), and the 1-, 3-, 4or 5 pyrazolyl radical can be unsubstituted or mono- or up to trisubstituted by the same of different substituents from the group of hydrogen, or Y;

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a 1 , 2 , 3 , 4 , or 5 pyrrolyl radical, or a 1 , 2 , 3 , 4 , or 5 pyrrolyl-  $C_{l-6}$  alkyl radical, wherein the  $C_{l-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{l-6}$  alkyl, halogen or oxo (=0), and the 1 -, 2 , 3 , 4 or 5 pyrrolyl radical can be unsubstituted or mono- or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1 , 3 , or 5 [1.2.4] triazolyl radical, or a 1 , 3 , or 5 [ 1.2.4] triazolyl C<sub>1.6</sub> alkyl radical, wherein the C<sub>1.6</sub> alkyl radical can be unsubstituted or mone or polysubstituted by the same or different substituents from the group of hydrogen, C<sub>1.6</sub> alkyl, halogen or oxo (=0), and the 1 -, 3 -, or 5 [1.2.4] triazolyl radical can be unsubstituted or mone or disubstituted by the same or different substituents from Y;

a 1-, 4-, or 5-[1.2.3]-triazolyl radical, or a 1-, 4-, or 5-[1.2.3]-triazolyl- $C_{1.6}$  alkyl radical, wherein the  $C_{1.6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1.6}$  alkyl, halogen or exe (=0), and the 1-, 4-; or 5-[1.2.3] triazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1- or 5-[1H] tetrazolyl radical, or a 1-, or 5-[1H] tetrazolyl  $G_{1.6}$  alkyl radical, wherein the  $G_{1.6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $G_{1.6}$  alkyl, halogen or exe (=0), and the 1-, or 5-[1H] tetrazolyl radical can be unsubstituted or substituted by hydrogen, or Y;

a 2- or 5 [2H] tetrazoyl radical, or a 2- or 5 [2H] tetrazolyl C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or exe (=O), and the 2- or 5- [2H]-tetrazolyl radical can be unsubstituted or substituted by hydrogen, or Y;

a 2-, 4-, or 6-[1.3.5]-triazinyl radical, or a 2-, 4-, or 6-[-1.3.5]-triazinyl C<sub>1-6</sub> alkyl radical; wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of hydrogen, C<sub>1-6</sub> alkyl, halogen or oxo

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(=O), and the 2,4,or 6 [1.3.5] triazinyl radical can be unsubstituted or mone-or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 4-, or 5 exazelyl radical, or a 2-, 4-, or 5 exazelyl C<sub>1-6</sub> alkyl radical, wherein the G<sub>1.6</sub>-alkyl radical can be unsubstituted or mone or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or exe (-O), and the 2, 4, or 5-oxazolyl radical can be unsubstituted or mono or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 3 , 4 , or 5 isoxazolyl radical, or a 3 , 4 , or 5 isoxazolyl C<sub>L 6</sub> alkyl radical, wherein the C1-6-alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C<sub>1.6</sub> alkyl, halogen or exe (-O), and the 3., 4., or 5-isoxazolyl radical can be unsubstituted or mone or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1 , 2 , 3 , 4 , 5 , 6 or 7 indolyl radical, or a 1 , 2 , 3 , 4 , 5 , 6 or 7 indolyl C<sub>1 6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mone or polysubstituted by the same or different substituents from the group of  $C_{1.6}$  alkyl, halogen or exe (=0), and the 1, 2, 3, 4, 5, 6 or 7-indolyl radical can be unsubstituted or mono or up to hexasubstituted by the same or different substituents from the group of hydrogen, or Y.

Claim 4 (currently amended): The quinoline derivative of elaim 3 claims 3 or 16, wherein in  $R_4$  said fluorine atoms are trifluoromethyl, and said  $C_{1-8}$  alkoxy is methoxy or ethoxy.

Claim 5 (original): The quinoline derivative of claim 1, wherein R, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, X, Z, P, Q, n and m have the meanings given above, and  $R_4$  is phenyl which is unsubstituted or substituted by one to five the same or different C1-6 alkoxy groups, where adjacent oxygen atoms can also be linked by  $C_{1-2}$  alkylene groups.

Claim 6 (original): The quinoline derivative of claim 1, wherein R, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, X, Z, P, Q, n and m have the meanings given above and  $R_4$  is 3,5-dimethoxyphenyl.

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Claim 7 (currently amended): The quinoline derivative of claim 1 claims 1 or 15, wherein R<sub>4</sub> has the meanings given above, R, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> each is hydrogen, Z is an oxygen atom, X is a nitrogen atom, P and Q are each two hydrogen atoms as in -[CH2]CH<sub>2</sub>-, m is zero, and n is 2.

Claim 8 (currently amended): The quinoline derivative of claim 1, wherein R,  $R_1$ ,  $R_2$ ,  $R_3$  are each a hydrogen atom, Z is an oxygen atom, X is a nitrogen atom, P and Q each are two hydrogen atoms as in -[CH2]CH<sub>2</sub>-, m is zero, n is 2, and [R4]R<sub>4</sub> is a 3,5-dimethoxyphenyl radical.

Claim 9 (currently amended): A process for preparing the quinoline derivative of elaim 1 claims 1 or 15, which comprises reacting a quinoline carboxylic acid of formula (2)

$$R$$
 $R_1$ 
 $R_2$ 
 $R_3$ 

(2)

in which R,  $R_1$ ,  $R_2$ ,  $R_3$  have the meanings given above, Z is an oxygen or sulfur atom, and Y is a leaving group with an amine of formula (3)

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(3)

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in which R4, X, P, Q, m and n have the meanings given above, optionally in the presence of diluents and auxiliaries.

Claim 10 (Cancelled)

Claim 11 (Cancelled)

Claim 12 (Cancelled)

Claim 13 (currently amended): A medicament which comprises as active ingredient at least one quinoline derivative according of elaim 1 claims 1 or 15, together with conventional pharmaceutically acceptable auxiliaries, additives and carriers.

Claim 14 (currently amended): The pharmaceutically acceptable acid addition salt of the quinoline derivative of claim 1 claims 1 or 15, when formed with one of the acids hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid, fumaric acvid, succinic acid, lactic acid, citric acid, acetic acid, tartaric acid, malic acid, maleic acid, embonic acid, malonic acid, trifluoroacetic acid, metanesulfonic acid, and sulfoacetic acid.

Claim 15 (new):

Quinoline derivatives according to the formula 1

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(1)

in which

R,  $R_1$ ,  $R_2$ ,  $R_3$  can be attached to any of the quinoline carbon atoms  $C_2$  to  $C_8$ , are identical or different and independently of one another denote hydrogen, straight-chain or branched  $C_{1-8}$  alkyl,  $C_{3-7}$  cycloalkyl, straight-chain or branched  $C_{1-8}$  alkylcarbonyl, straight-chain or branched  $C_{1-8}$  alkoxy, halogen, aryl- $C_{1-8}$  alkoxy, nitro, amino, mono- $C_{1-4}$ alkylamino, di-C<sub>1-4</sub> alkylamino, C<sub>1-8</sub> alkoxycarbonylamino, C<sub>1-6</sub> alkoxycarbonylamino-C<sub>1-8</sub> alkyl, cyano, straight-chain or branched cyano-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, carboxyl, C<sub>1-8</sub> alkoxycarbonyl, C<sub>1-4</sub> alkyl which is substituted by one or more fluorine atoms, carboxy-C<sub>1-8</sub> alkyl or C<sub>1-8</sub> alkoxycarbonyl-C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, straight-chain or branched cyano-C1-6 alkyl, aryl, where the aryl radical can be unsubstituted or mono- or polysubstituted by identical or different substituents from the group consisting of halogen, straight-chain or branched  $C_{1-2}$  alkyl,  $C_{3-7}$  cycloalkyl, carboxyl, straight-chain or branched C<sub>1-8</sub> alkoxycarbonyl, by trifluoromethyl, hydroxyl, straight-chain or branched C<sub>1-8</sub> alkoxy, benzyloxy, nitro, amino, mono-C<sub>1-4</sub> alkylamino, di-C<sub>1-4</sub> alkylamino, cyano, straight-chain or branched cyano-C1-6 alkyl, where R and R1 or R2 and R3 can form a fused aromatic 6-membered ring with the quinoline ring forming an acridine ring which for its part can be substituted at any C atom ring position by the radicals R, R1, R2 and R3 having the meanings mentioned above;

P and Q are each 2 hydrogen atoms;

Z is oxygen or sulfur, where the radical

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substituted on the quinoline heterocycle can be attached to C atoms  $C_{2-8}$  of the quinoline ring skeleton;

X is nitrogen;

n is 1 or 2 and m is 0 or 1, with the proviso that the sum of n and m is 2;

is C<sub>6-14</sub> aryl-C<sub>1-4</sub> alkyl radical where the C<sub>1-4</sub> alkyl radical can be unsubstituted or  $R_4$ mono- or polysubstituted by identical or different substituents from the group consisting of  $C_{1-6}$  alkyl, halogen or oxo (=0) and where the  $C_{6-14}$  aryl or  $C_{2-10}$  heteroaryl radical can be unsubstituted or mono- or polysubstituted by identical or different substituents from the group consisting of straight-chain or branched C1-8 alkyl, C3-7 cycloalkyl, halogen, cyano, C<sub>1-6</sub> alkoxycarbonylamino, carboxyl, C<sub>1-8</sub> alkoxycarbonyl, straight-chain or branched C<sub>1-6</sub> alkyl which is substituted by one or more fluorine atoms, hydroxyl, straight-chain or branched C1-8 alkoxy, where adjacent oxygen atoms can also be linked by C<sub>1-2</sub> alkylene groups, benzyloxy, nitro, amino, mono-C<sub>1-4</sub> alkylamino, di-C<sub>1-4</sub> alkylamino, aryl, which can be unsubstituted or mono- or polysubstituted by identical or different substituents from the group consisting of straight-chain or branched C<sub>1-8</sub> alkyl, C<sub>3-7</sub> cycloalkyl, carboxyl, straight-chain or branched C<sub>1-8</sub> alkoxycarbonyl, trifluoromethyl, hydroxyl, straight-chain or branched C1-8 alkoxy, benzyloxy, nitro, amino, mono-C1-4 alkylamino, di-C1-4 alkylamino, cyano, straight-chain or branched cyano-C<sub>1-6</sub> alkyl;

and their structural isomers and stereoisomers and their pharmaceutically acceptable salts.

Claim 16 (new): The quinoline derivative of formula 1 of claim 15, wherein R,  $R_1$ ,  $R_2$ ,  $R_3$ , X, Z, P, Q, n and m have the meanings given in claim 15;

R4 is

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a 2-, 4-, 5- or 6-pyrimidinyl radical, or a 2-, 4-, 5- or 6-pyrimidinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0) and the 2-, 4-, 5- or 6-pyrimidinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y

wherein Y is a  $C_{1-6}$  alkyl, halogen, nitro, amino, mono- $C_{1-6}$  alkylamino, di- $C_{1-6}$  alkylamino, hydroxyl,  $C_{1-6}$  alkoxy, benzyloxy, carboxyl,  $C_{1-6}$  alkoxycarbonyl,  $C_{1-6}$  alkoxycarbonylamino or  $C_{1-6}$  alkyl which is mono- or polysubstituted by fluorine,  $C_{6-10}$  aryl and  $C_{6-10}$  aryl- $C_{1-6}$  alkyl;

a 3-, 4-, 5- or 6-pyridazinyl radical, or a 3-, 4-, 5- or 6pyridazinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 3-, 4-, 5- or 6-pyridazinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 3-, 5- or 6-pyrazinyl radical, or a 2-, 3-, 5- or 6-pyrazinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=O), and the 2-, 3-, 5- or 6-pyrazinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y; a 3-, 4-, 5-, 6-, 7-, or 8-cinnolinyl radical, or a 3-, 4-, 5-, 6-, 7-, or 8-cinnolinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-4}$  alkyl, halogen or oxo (=O), and the 3-, 4-, 5-, 6-, 7-, or 8-cinnolinyl radical can be unsubstituted or mono- or up to pentasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 4-, 5-, 6-, 7-, or 8-quinazolinyl radical, or a 2-, 4-, 5-, 6-, 7 or 8-quinazolinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of hydrogen,  $C_{1-6}$ 

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alkyl, halogen or oxo (=O), and the 2-, 4-, 5-, 6-, 7-, or 8-quinazolinyl radical can be unsubstituted or mono- or up to pentasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 3-, 5-, 6-, 7-, or 8-quinoxalinyl radical, or a 2-, 3-, 5-, 6-, 7-, or 8-quinoxalinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2-, 3-, 5-, 6-, 7-, or 8-quinoxalinyl radical can be unsubstituted or mono- or up to pentasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1-, 4-, 5-, 6-, 7-, or 8-phthalazinyl radical, or a 1-, 4-, 5-, 6-, 7-, or 8-phthalazinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 1-, 4-, 5-, 6-, 7-, or 8-phthalazinyl radical can be unsubstituted or mono- or up to pentasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 3-, 4-, 5-, 6-, 7- or 8-quinolyl radical, or a 2-, 3-, 4-, 5-, 6-, 7 or 8-quinolyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2-, 3-, 4-, 5-, 6-, 7- or 8-quinolyl radical can be unsubstituted or mono- or up to hexasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1-, 3-, 4-, 5-, 6-, 7- or 8-isoquinolyl radical, or a 1-, 3-, 4-, 5-, 6-, 7- or 8-isoquinolyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=O), and the 1-, 4-, 5-, 6-, 7- or 8-isoquinolyl radical can be unsubstituted or mono- or up to hexasubstituted by the same or different substituents from the group of hydrogen, or Y;

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- a 2-, 6-, 8- or 9-[9H]-purinyl radical, or a 2-, 6-, 8- or 9-[9H]-purinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2-, 6-, 8- or 9-[9H]-purinyl radical can be unsubstituted or mono- to trisubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 2-, 6-, 7- or 8-[7H]-purinyl radical, or a 2-, 6-, 7- or 8-[7H]-purinyl- $C_{1-4}$  alkyl radical, wherein the  $C_{1-4}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2-, 6-, 7- or 8-[7H]-purinyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-acridinyl radical, or a 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-acridinyl- $C_{1-4}$  alkyl radical, where the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=O), and the 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-acridinyl radical can be unsubstituted or mono- to octasubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-phenanthridinyl radical, or a 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-phenanthridinyl-C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of hydrogen, C<sub>1-6</sub> alkyl, halogen or oxo (=0), and the 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-phenanthridinyl radical can be unsubstituted or mono- or up to octasubstituted by the same or different substituents of Y;
- a 2-, 3-, 4-, 5- or 6-pyridyl radical where the 2-, 3-, 4-, 5- or 6pyridyl radical can be unsubstituted or mono- or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 2-, 3-, 4-, 5- or 6-pyridinyl- $C_{1-6}$  alkyl radical, wherein the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the

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group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2-, 3-, 4-, 5- or 6-pyridinyl radical can be unsubstituted or mono- or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 3-, 4- or 5-thienyl radical, or a 2-, 3-, 4- or 5-thienyl- C<sub>1-6</sub> alkyl radical, wherein the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 2-, 3-, 4or 5-thienyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 4-, or 5-thiazolyl radical, or a 2-, 4-, or 5-thiazolyl et-6 alkyl Ct o alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C1-6 alkyl, halogen or oxo (=0), and the 2-, 4-, or 5-thiazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 3-, 4-, or 5-isothiazolyl radical, or a 3-, 4-, or 5-isothiazolyl-C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or oxo (=0), and the 3-, 4-, or 5-isothiazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;

a 2-, 4-, 5-, 6-, or 7-benzothiazolyl radical, or a 2-, 4-, 5-, 6-, or 7-benzothiazolyl- $C_{1-6}$ alkyl radical, wherein the C1-6 alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C1-6 alkyl, halogen or oxo (=O), and the 2-, 4-, 5-, 6-, or 7-benzothiazolyl radical can be unsubstituted or mono- or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;

a 1-, 2-, 4-, or 5-imidazolyl radical, or a 1-, 2-, 4-, or 5 imidazolyl-C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C1-6 alkyl, halogen or oxo (=O), and the

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- 1-, 2-, 4-, or 5-imidazolyl radical can be unsubstituted or mono- or up to trisubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 1-, 3-, 4-, or 5-pyrazolyl radical, or a 1-, 3-, 4- or 5-pyrazolyl- $C_{1-6}$  alkyl radical, wherein the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 1-, 3-, 4- or 5-pyrazolyl radical can be unsubstituted or mono- or up to trisubstituted by the same of different substituents from the group of hydrogen, or Y;
- a 1-, 2-, 3-, 4-, or 5-pyrrolyl radical, or a 1-, 2-, 3-, 4-, or 5-pyrrolyl- $C_{1-6}$  alkyl radical, wherein the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 1-, 2-, 3-, 4- or 5-pyrrolyl radical can be unsubstituted or mono- or up to tetrasubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 1-, 3-, or 5-[1.2.4]-triazolyl radical, or a 1-, 3-, or 5-[1.2.4]-triazolyl- $C_{1-6}$  alkyl radical, wherein the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of hydrogen,  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 1-, 3-, or 5-[1.2.4]-triazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from Y;
- a 1-, 4-, or 5-[1.2.3]-triazolyl radical, or a 1-, 4-, or 5-[1.2.3]-triazolyl- $C_{1-6}$  alkyl radical, wherein the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 1-, 4-, or 5-[1.2.3]-triazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 1- or 5-[1H]-tetrazolyl radical, or a 1-, or 5-[1H]-tetrazolyl- $C_{1-6}$  alkyl radical, wherein the  $C_{1-6}$  alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of  $C_{1-6}$  alkyl, halogen or oxo (=0), and the 1-, or 5-[1H]-tetrazolyl radical can be unsubstituted or substituted by hydrogen, or Y;

a 2- or 5-[2H]-tetrazoyl radical, or a 2- or 5-[2H]-tetrazolyl-C1-6 alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C1-6 alkyl, halogen or oxo (=O), and the 2- or 5-[2H]-tetrazolyl radical can be unsubstituted or substituted by hydrogen, or Y;

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- a 2-, 4-, or 6-[1.3.5]-triazinyl radical, or a 2-, 4-, or 6-[1.3.5]-triazinyl-C<sub>1-6</sub> alkyl radical, wherein the C1-6 alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of hydrogen, C1-6 alkyl, halogen or oxo (=O), and the 2-, 4-, or 6-[1.3.5]-triazinyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 2-, 4-, or 5-oxazolyl radical, or a 2-, 4-, or 5-oxazolyl-C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C<sub>1-6</sub> alkyl, halogen or oxo (=O), and the 2-, 4-, or 5-oxazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 3-, 4-, or 5-isoxazolyl radical, or a 3-, 4-, or 5-isoxazolyl-C<sub>1-6</sub> alkyl radical, wherein the C<sub>1-6</sub> alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C1-6 alkyl, halogen or oxo (=O), and the 3-, 4-, or 5-isoxazolyl radical can be unsubstituted or mono- or disubstituted by the same or different substituents from the group of hydrogen, or Y;
- a 1-, 2-, 3-, 4-, 5-, 6- or 7-indolyl radical, or a 1-, 2-, 3-, 4-, 5-, 6 or 7-indolyl-C<sub>1-6</sub> alkyl radical, wherein the C1-6 alkyl radical can be unsubstituted or mono- or polysubstituted by the same or different substituents from the group of C1-6 alkyl, halogen or oxo (=O), and the 1-, 2-, 3-, 4-, 5-, 6- or 7-indolyl radical can be unsubstituted or mono- or up to hexasubstituted by the same or different substituents from the group of hydrogen, or Y.